Lei Wang

Curriculum Vitae

M812, Institute of Physics
Chinese Academy of Sciences, Beijing
☎ *+86 (10) 82649853*
✉ *wanglei@iphy.ac.cn*
⌂ *wangleiphy.github.io*

Personal data

Day of Birth	1st December 1983	Place of Birth	Nanjing
Sex	Male	Nationality	China
Researcher ID	B-1787-2010	Erdős Number	2 (via Gergely Harcos)

Academic Positions

2019.9– Present
Professor, *Institute of Physics, Chinese Academy of Sciences*, Beijing, China.

2016.3– 2019.8
Assistant Professor, *Institute of Physics, Chinese Academy of Sciences*, Beijing, China.

2015.6 – 2016.2
Senior research assistant (Oberassistent I), *ETH*, Zurich, Switzerland.

2011.9 – 2015.5
Postdoctoral research assistant, *ETH*, Zurich, Switzerland.
Supervisor: Prof. Dr. Matthias Troyer

Education

2006.9– 2011.7
PhD in Physics, *Institute of Physics, Chinese Academy of Sciences*, Beijing, China.
Supervisors: Prof. Xincheng Xie and Prof. Xi Dai

2002.9– 2006.6
BSc in Physics, *Nanjing University*, Nanjing, China.

Interests

Machine Intelligence
Deep learning and its application in scientific discoveries

Quantum Computing
Quantum algorithms and programing techniques

Algorithmic Design
Design new efficient algorithms for strongly correlated quantum matter

Skills

Computational Physics
Density functional theory, exact diagonalization, classical and quantum Monte Carlo methods, variational approach, tensor networks, dynamical mean field theory

Machine Learning
Theory and implementation of deep generative models

Programming	High performance scientific computing with C++, Python and Fortran. Differentiable programing with PyTorch.

Awards

2009–2010	**Director's scholarship**, *Institute of Physics.*
2009–2010	**Excellent student awards**, *Graduate School of Chinese Academy of Sciences.*
2003–2006	**Renmin scholarship**, *Nanjing University.*

Publications

[1] **Lei Wang**, Xi Dai, Shu Chen, and X. C. Xie. *Magnetism of cold fermionic atoms on the p band of an optical lattice.* Phys. Rev. A **78**, 023603 (2008).

[2] XiaoYu Deng, **Lei Wang**, Xi Dai, and Zhong Fang. *Local density approximation combined with Gutzwiller method for correlated electron systems: Formalism and applications.* Phys. Rev. B **79**, 075114 (2009).

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[12] Thomas Uehlinger, Daniel Greif, Gregor Jotzu, Leticia Tarruell, Tilman Esslinger, **Lei Wang** and Matthias Troyer. *Double transfer through Dirac points in a tunable honeycomb optical lattice.* Eur. Phys. J. Special Topics, **217**, 121 (2013). (Cover image)

[13] Hsiang-Hsuan Hung, **Lei Wang**, Zheng-Cheng Gu and Gregory A. Fiete. *Topological phase transition in a generalized Kane-Mele-Hubbard model: A combined Quantum Monte Carlo and Green's function study.* Phys. Rev. B **87**, 121113(R) (2013).

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[15] Zi Cai, Hsiang-Hsuan Hung, **Lei Wang**, Dong Zheng and Congjun Wu. *Pomeranchuk cooling of the SU(2N) ultra-cold fermions in optical lattices.* Phys. Rev. Lett **110**, 220401 (2013).

[16] **Lei Wang**, Matthias Troyer and Xi Dai. *Topological charge pumping in a one-dimensional optical lattice.* Phys. Rev. Lett **111**, 026802 (2013).

[17] Zi Cai, Hsiang-Hsuan Hung, **Lei Wang** and Congjun Wu. *Quantum magnetic properties of the SU(2N) Hubbard model in the square lattice: a quantum Monte Carlo study.* Phys. Rev. B **88**, 125108 (2013).

[18] **Lei Wang** and Matthias Troyer. *Seeing Hofstadter's Butterfly in Atomic Fermi Gases.* Phys. Rev. A **89**, 011603(R) (2014).

[19] Jakub Imriška, Mauro Iazzi, **Lei Wang**, Emanuel Gull, Daniel Greif, Thomas Uehlinger, Gregor Jotzu, Leticia Tarruell, Tilman Esslinger and Matthias Troyer. *Thermodynamics and magnetic properties of the anisotropic 3D Hubbard model*, Phys. Rev. Lett **112**, 115301 (2014).

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[21] **Lei Wang** and Matthias Troyer. *Renyi Entanglement Entropy of Interacting Fermions Calculated Using Continuous-Time Quantum Monte Carlo Method*, Phys. Rev. Lett. **113**, 110401 (2014).

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[23] **Lei Wang**, Hsiang-Hsuan Hung and Matthias Troyer. *Topological Phase Transition in the Hofstadter-Hubbard Model*, Phys. Rev. B **90**, 205111 (2014).

[24] **Lei Wang**, Mauro Iazzi, Philippe Corboz and Matthias Troyer. *Efficient Continuous-time Quantum Monte Carlo Method for the Ground State of Correlated Fermions*, Phys. Rev. B **91**, 235151 (2015), Editors' suggestion.

[25] **Lei Wang**, Ye-Hua Liu, Jakub Imriška, Ping Nang Ma, Matthias Troyer. *Fidelity susceptibility made simple: A unified quantum Monte Carlo approach*, Phys. Rev. X **5**, 031007 (2015).

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[54] Jin-Guo Liu, Yi-Hong Zhang, Yuan Wan, **Lei Wang**, *Variational Quantum Eigensolver with Fewer Qubits*, Phys. Rev. Research **1**, 023025 (2019)

[55] Da Wang, **Lei Wang**, Congjun Wu, *Slater and Mott insulating states in the SU(6) Hubbard model*, Phys. Rev. B **100**, 115155 (2019)

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[3] **Lei Wang**, Hao Shi, Shiwei Zhang, Xiaoqun Wang, Xi Dai and X. C. Xie. *Charge-density-wave and topological transitions in interacting Haldane model*, arXiv:1012.5163

[4] **Lei Wang**, Troels F. Rønnow, Sergio Boixo, Sergei V. Isakov, Zhihui Wang, David Wecker, Daniel A. Lidar, John M. Martinis and Matthias Troyer. *Comment on: "Classical signature of quantum annealing"*, arXiv:1305.5837

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[8] Romain Fournier, **Lei Wang**, Oleg V. Yazyev, QuanSheng Wu, *An Artificial Neural Network Approach to the Analytic Continuation Problem*, arXiv:1810.00913

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